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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/532,398	10/12/2005	Hannu Mikkonen	0365-0627PUS1	1581

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EXAMINER

LAU, JONATHAN S

ART UNIT	PAPER NUMBER
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1623

NOTIFICATION DATE	DELIVERY MODE
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10/29/2008

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/532,398	Applicant(s) MIKKONEN ET AL.	
	Examiner Jonathan S. Lau	Art Unit 1623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 July 2008 and 25 July 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,5-12,14,15 and 22-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,5-12,14,15 and 22-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This Office Action is responsive to Applicant's Amendment and Remarks, filed 07 July 2008, in which claim 1 is amended to change the scope and breadth of the claim, claims 5-12 and 14-16 are amended to better conform to US practice, claims 2-4, 13 and 17-21 are canceled, and new claims 22-30 are added; and Applicant's Amendment and Remarks, filed 25 July 2008, in which claim 16 is canceled.

This application is the national stage entry of PCT/FI03/00796, filed 24 Oct 2003; and claims benefit of foreign priority document FINLAND 20021904, filed 25 Oct 2002; currently an English language translation of this foreign priority document has not been filed.

Claims 1, 5-12, 14, 15 and 22-30 are pending in the current application.

Objections Withdrawn

Applicant's Amendment, filed 07 July 2008, with respect to objections to the oath/declaration has been fully considered and is persuasive, as a Supplemental Declaration is filed.

This objection has been **withdrawn**.

Applicant's Amendment, filed 07 July 2008, with respect to objections to claim 15 has been fully considered and is persuasive, as the typographical errors are corrected.

This objection has been **withdrawn**.

Rejections Withdrawn

Applicant's Amendment, filed 07 July 2008, with respect to claim 1 rejected under 35 USC § 112, first paragraph, as containing subject matter which was not reasonably described in the specification has been fully considered and is persuasive, as amended claim 1 does not recite a starch derivative.

This rejection has been **withdrawn**.

Applicant's Amendment, filed 07 July 2008, with respect to claim 5, 7, 9, 10, 14, 16 and 17 rejected under 35 U.S.C. 112, second paragraph, as being indefinite has been fully considered and is persuasive with regard to the following terms: amended claims 5, 7, 9 and 14 do not recite the identified broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim); amended claim 10 does not recite the relative term "where necessary"; and claims 16 and 17 are canceled. The rejection of amended claim 9 with regard to the language "such that the total amount of liquid will be less than 30% ... of the dry matter content" is modified and reiterated below.

This rejection with regard to claim 5, 7, 10, 14, 16 and 17 has been **withdrawn**.
This rejection with regard to claim 9 is modified and reiterated below.

Applicant's Amendment, filed 07 July 2008, with respect to claim 1-5, 10-16 and 18 rejected under 35 U.S.C. 102(b) as being anticipated by Roth (US Patent 3,346,558,

Art Unit: 1623

issued 10 Oct 1967, of record) has been fully considered and is persuasive, as amended claim 1 requires the acid catalyst comprises phosphorous, and claims 5, 10-12 and 14-15 depend from claim 1 and incorporate all limitations therein; and claims 2-4, 13, 16 and 18 are canceled.

This rejection has been **withdrawn**.

Applicant's Amendment, filed 07 July 2008, with respect to claim 1-5, 14-16 and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Carr (Journal of Applied Polymer Science, 1991, 42, p45-53, provided by Applicant in IDS mailed 22 Apr 2005) has been fully considered and is persuasive, as amended claim 1 requires the acid catalyst comprises phosphorous, and claims 5 and 14-15 depend from claim 1 and incorporate all limitations therein; and claims 2-4, 16 and 18 are canceled.

This rejection has been **withdrawn**.

Applicant's Amendment, filed 07 July 2008, with respect to claim 1-5, 10, 11, 14-16 and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Subramanian and Hanna (Cereal Chem., 1996, 73(2), p179-184, provided by Applicant on IDS mailed 22 Apr 2005) has been fully considered and is persuasive, as amended claim 1 requires the acid catalyst comprises phosphorous, and claims 5, 10, 11 and 14-15 depend from claim 1 and incorporate all limitations therein; and claims 2-4, 16 and 18 are canceled.

This rejection has been **withdrawn**.

Applicant's Amendment, filed 07 July 2008, with respect to claim 1, 12-14 and 18 provisionally rejected on the ground of nonstatutory double patenting over claim 14 of copending Application No. 10/504,296 has been fully considered and is persuasive, as amended claim 1 requires the acid catalyst comprises phosphorous, and claims 12-14 depend from claim 1 and incorporate all limitations therein; and claim 18 is canceled.

This provisional rejection has been **withdrawn**.

Specification

Applicant's Remarks, filed 07 July 2008, with respect to objections to the specification has been fully considered and is not persuasive, as the preferred arrangement of the specification is detailed in MPEP 608.01(a). See 37 CFR 1.71(b), "The specification must set forth the precise invention for which a patent is solicited, in such manner as to distinguish it from other inventions and from what is old."

Paragraphs 4-24 appear to detail the field of the invention, however, absent section headings, the specification does not set forth in such manner as to distinguish the instant invention from other inventions and from what is old.

This objection has been **maintained**.

The following are new or modified grounds necessitated by Applicant's Amendment, filed 07 July 2008, in which claim 1 is amended to change the scope and breadth of the claim, claims 5-12 and 14-16 are amended to better conform to US practice, claims 2-4, 13 and 17-21 are canceled, and new claims 22-30 are added; and

Art Unit: 1623

Applicant's Amendment, filed 25 July 2008, in which claim 16 is canceled. Amended claims 5-12, 14-15 and 22-30 depend from claim 1 and incorporate all limitations therein, including changes in the scope and breadth of the claim.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Amended Claims 9 and 30 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Amended Claim 9 recites "amount of liquid will be less than 30% of the dry matter content of the pre-mixture" (emphasis added) in line 3, however no guidance is given for how this percentage is determined. It is unclear if this percentage is a % by weight, a % by volume, a % weight of liquid vs. volume of dry matter, % volume of liquid vs. weight of dry matter, or a mole %. The specification recites the same percentage on page 11, lines 4-5 without specifying what type of percentage is being determined. For the purpose of furthering prosecution, the percentage has been interpreted as a % by weight.

Amended Claim 30 recites the limitation "wherein the acid catalyst is selected from at least one of the group consisting of: a strong mineral acid, mono-polyalkylated aryl monosulphonic acid, mono-polyalkylated polysulphonic acid, polyalkylated aryl mono- sulphonic acid, polyalkylated aryl polysulphonic acid, and an acidic ion exchange

Art Unit: 1623

resin." in lines 1-4. There is insufficient antecedent basis for this limitation in the claim.

Amended claim 1, from which claim 30 depends, requires the acidic catalyst is a

phosphorus-containing acid selected from at least one of the group consisting of:

phosphoric acid, H_3PO_4 , hypophosphorous acid, H_3PO_2 , and phosphorous acid, H_3PO_3 .

There is lack of antecedent basis for the scope of "a strong mineral acid", "an acidic ion exchange resin" or the specific acid catalysts recited in claim 30.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Amended Claims 1, 5-12, 14, 15 and 22-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Roth (US Patent 3,346,558, issued 10 Oct 1967, of record) in view of Leitheiser et al. (Ind. Eng. Chem. Res. Dev., 1966, 5(3), p276-282, of record).

Roth discloses a process for preparing polyol-glycosides comprising reacting starch, polyol and acid at elevated temperature and pressure (column 1, lines 10-15) using a screw-type extruder (column 2, lines 18-20) that contains two zones for heating (column 2, lines 22-25 and column 3, lines 72-75). Roth discloses the temperature in the range of at least 170 °C (column 1, lines 20-21), which is within the range of 105 to 200 °C [instant claim 5] and 110 to 190 °C [instant claim 22]. Roth discloses the use starch esters or ethers such as starch acetates, carboxymethyl starch, carboxyethyl starch, methyl starch, hydroxyethyl starch, and hydroxypropyl starch (column 2, lines 37-43) [instant claims 1 and 12]. Roth discloses starch, polyol and acid mixture is subjected to intense mechanical working or shearing (column 3, lines 64-67), which is interpreted as compacting and granulating [instant claims 10 and 27]. Roth discloses the mixture fed into a conventional one-screw type extruder (column 4, lines 19-21) [instant claim 11]. Roth discloses the use of ethylene glycol, 1,2-propylene glycol, and glycerol (column 2, lines 60-67) [instant claims 14 and 15]. For example, glycerol is an alkanol with 3 carbon atoms and 3 hydroxyl groups [instant claims 28 and 29]. Roth discloses any strong mineral acid can be employed, and discloses non-limiting examples of mineral acid catalysts sulfuric acid and hydrochloric acid (column 3, lines 30-36). Acid catalysts work by protonating the substrate, or forming a chemical bond between the catalyst proton and the substrate, in the instant case a transglycosylation

Art Unit: 1623

product [instant claim 1]. Roth discloses the alcohol used in a concentration of 0.10 to 2.0 equivalents per gram mole of starch (column 3, lines 1-2). A mixture of 0.1 mole of the alkanol ethylene glycol (62 g/mol) and 1.0 mole of starch (162 g/mol) is approximately 4 weight-% and approximately 9 mole-% [instant claims 7 and 23]. To one significant digit approximately 9 mole-% is approximately 5 mole-% [instant claims 7] or 2 mole-% [instant claim 24]. Roth discloses the mixture of starch, polyhydric alcohol, and acid mixed together and dried after mixing (column 3, lines 53-55) to have a superficially dry mixture (column 4, line 40-43). As calculated above, the liquid reagent of alcohol and acid are approximately 4 weight-% [instant claim 9]. To one significant digit approximately 4 weight-% is approximately 5 weight-% [instant claim 26]. Roth discloses the starch, polyhydric alcohol, and acid composition is mixed and converted into a fluid mass in the first zone of the reactor (column 3, lines 65-72), describing a fluidized-bed type of a mixing device to produce the pre-mixture [instant claim 8].

Roth does not specifically disclose the acidic catalyst is a phosphorus-containing acid selected from at least one of the group consisting of: phosphoric acid, H_3PO_4 , hypophosphorous acid, H_3PO_2 , and phosphorous acid, H_3PO_3 (instant claim 1). Roth does not specifically disclose prior to performing the transglycosylation reaction the alkanol and acidic substance are mixed together and an aerosol is produced from this mixture (instant claim 6). Roth does not specifically disclose the process wherein the amount of the alkanol is approximately 0.015 to 0.3 mole-% of the amount of the starch ester or the starch ether (instant claim 25). Roth does not specifically disclose the

Art Unit: 1623

acidic catalyst comprises phosphorus wherein the acid catalyst is selected from at least one of the group consisting of: a strong mineral acid, mono-polyalkylated aryl monosulphonic acid, mono-polyalkylated polysulphonic acid, polyalkylated aryl monosulphonic acid, polyalkylated aryl polysulphonic acid, and an acidic ion exchange resin (instant claim 30).

Leitheiser et al. teaches mixing the alkanol and acidic substance prior to performing a transglycosylation reaction and heating the mixture to 250 °F under reduced pressure (page 277, left column, lines 30-34), which would inherently produce some of the of the mixture in the form of an aerosol. Leitheiser et al. teaches the use of an acidic catalyst of sulfuric acid and phosphoric acid (page 277, left column, lines 30-34) , a phosphorous-containing acid that is a strong mineral acid. Leitheiser et al. teaches that mixing the alkanol and acidic substance prior to performing a transglycosylation reaction avoids the gelation of mixing starch, polyhydric alcohol, and acid that makes good heat transfer difficult (page 277, left column, lines 10-15).

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the process for preparing polyol-glycosides comprising reacting starch, polyol and acid using a screw-type extruder disclosed by Roth with the teaching of mixing the alkanol and acidic substance prior to performing a transglycosylation reaction and an acidic catalyst of sulfuric acid and phosphoric acid of Leitheiser et al. Leitheiser et al. teaches that mixing the alkanol and acidic substance prior to performing a transglycosylation reaction avoids the gelation of mixing starch, polyhydric alcohol, and acid that makes good heat transfer difficult. Roth also teaches that adding the

Art Unit: 1623

starch to an alkanol and acid composition eliminates the gel state (column 1, lines 46-50). Although Roth does not specifically disclose the use of a phosphorous-containing acid, Roth discloses any strong mineral acid can be employed (column 3, lines 35-36). Therefore one of ordinary skill in the art at the time of the invention would be motivated to combine the invention of Roth with the teaching of Leitheiser et al. based on the suggestions of both Roth and Leitheiser et al. With regard to the amount of the alkanol as a mole-% of the amount of the starch ester or the starch ether, "Generally, differences in concentration or temperature will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such concentration or temperature is critical", see MPEP 2144.05 II.A. Roth teaches it is within the level of ordinary skill in the art to discover the optimum or workable ranges by routine experimentation.

Response to Applicant's Remarks:

Applicant's Remarks, filed 07 July 2008, have been fully considered and found not to be persuasive.

Applicant remarks that dependent claims 2, 4, 13 and 18 were not rejected as obvious over Roth in view of Leitheiser et al. The dependent limitations recited within amended claim 2, 4, 13 and 18 were identified as disclosed by Roth in the rejection under 35 USC 102(b) detailed in the Office Action mailed 05 Mar 2008. Anticipation is the epitome of obviousness. Upon reconsideration necessitated by Applicant's Amendment to the claims it is found that the teaching of Roth in view of Leitheiser et al.

Art Unit: 1623

does not negate or destroy the combination of the features disclosed by Roth required by the amended claims.

Conclusion

No claim is found to be allowable.

Applicant's amendment necessitated the new or modified ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonathan S. Lau whose telephone number is 571-270-3531. The examiner can normally be reached on Monday - Thursday, 9 am - 4 pm EST.

Art Unit: 1623

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shaojia Anna Jiang can be reached on 571-272-0627. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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